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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Jacek Stachurski et al.
Serial No:	09/668,844
Filed:	9/22/2000
Art Unit:	2654
Examiner:	Lerner
Docket No.:	TI-29492
Conf. No.:	2444
Customer No.:	23494

CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that the following papers are being transmitted by facsimile to the U.S. Patent and Trademark Office at **571-273-8300** on the date shown below:

Gracia Sansom — Gracia Sansom
10-31-05 — Date

FACSIMILE COVER SHEET

X FACSIMILE COVER SHEET (1 SHEET)	___ AMENDMENT
___ NEW APPLICATION	___ EOT
___ DECLARATION	___ NOTICE OF APPEAL
___ ASSIGNMENT	X APPEAL BRIEF (6 Pages)
___ FORMAL DRAWINGS	___ ISSUE FEE
___ INFORMAL DRAWINGS	___ REPLY BRIEF (IN TRIPLICATE)
___ CONTINUATION APP'N	___
___ DIVISIONAL APP'N	

NAME OF INVENTOR(S):
Jacek Stachurski et al.

TITLE OF INVENTION:
Hybrid Speech Coding and System

TI FILE NO.:	DEPOSIT ACCT. NO.:
TI-29492	**20-0668**

FAXED: **10/31/2005**
DUE: **10/31/2005**
ATTY/SECY: **CHH/gs**

RECEIPT DATE & SERIAL NO.:
Serial No.: 09/668,844
Filing Date: 9/22/2000
Conf. No.: 2444

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appl.No.:	09/668,844	Confirmation No.: 2444
Appellant:	Stachurski et al	
Filed:	September 22, 2000	
TC/AU:	2654	
Examiner:	Lerner	
Docket:	TI-29492	
Cust.No.:	23494	

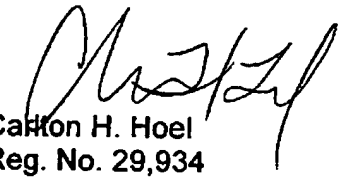
APPELLANTS' BRIEF

Commissioner for Patents
P.O.Box 1450
Alexandria VA 22313-1450

Sir:

The attached sheets contain the Rule 41.37 items of appellants' brief. The Commissioner is hereby authorized to charge the fee for filing a brief in support of the appeal plus any other necessary fees to the deposit account of Texas Instruments Incorporated, account No. 20-0668. A fee transmittal sheet is enclosed.

Respectfully submitted,



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Rule 41.37(c)(1)(i) Real party of interest

Texas Instruments Incorporated owns the application.

Rule 41.37(c)(1)(ii) Related appeals and interferences

There are no related dispositive appeals or interferences.

Rule 41.37(c)(1)(iii) Status of claims

Claims 1-7 are pending in the application with all claims finally rejected. This appeal involves the finally rejected claims.

Rule 41.37(c)(1)(iv) Status of amendments

There is no amendment after final rejection.

Rule 41.37(c)(1)(v) Summary of claimed subject matter

The invention provides a method of hybrid speech coding with an alignment phase encoded. Hybrid coding uses parametric coding (MELP) for speech frames with periodic (voiced) characteristics and waveform coding (CELP) for non-periodic characteristics. Parametric coding ignores phase (only magnitudes of Fourier coefficients of excitations are used), but waveform coding inherently maintains phase; and thus switching between the two coding types creates artifacts in the speech synthesized by a decoder. The claimed encoded alignment phase is used to align the speech synthesized from parametric encoding; application Fig.1c and page 26, second paragraph from the bottom show use of the alignment phase, $\phi(A,t)$, in speech synthesis. Figs.4a-4d and pages 19-26 describe the (involved) method of finding and quantizing the alignment phase for encoding.

Rule 41.37(c)(1)(vi) Grounds of rejection to be reviewed on appeal

The grounds of rejection to be reviewed on appeal are:

(1) Claims 1 and 3-7 were rejected as unpatentable over the Aguilar reference in view of the Cuperman reference.

(2) Claim 2 was rejected as unpatentable over the Aguilar reference in view of the Cuperman and Thomson references.

Rule 41.37(c)(1)(vii) Arguments

(1) Claims 1 and 3-7 were rejected as unpatentable over Aguilar in view of Cuperman; the Examiner pointed to Aguilar module 422, alignment processor 425, and alignment algorithm in column 15, lines 15 et seq. to show the alignment phase, and cited Cuperman's encoded phase dispersion, D_ϕ, as equivalent to alignment phase.

Appellants first reply that Aguilar, when decoding, apparently estimates an alignment phase with the cited algorithm and modules, but Aguilar does not encode an alignment phase as required by independent claims 1 and 3-4. Indeed, the encoding outputs in Aguilar Fig.1B have no suggestion of an alignment phase; rather, frg_q is the frame gain, pv_q is the voicing, lsf_q is the LSF vector, pr_q is the pitch period, fcbi is the fixed codebook index, gp_q is the adaptive codebook gain, and gc_q is the fixed codebook gain. And decoder Fig.2B has module 240 which computes (not decodes) fundamental phase fo_ph and phase offset beta from inputs pr_q, pv_q, and sq(n) which is the decoding of gc_q, gp_q, fcbi, pr_q, and lsf_q. In contrast, see application page 7 which shows 6 bits being allocated to the claimed alignment phase encoding for that preferred embodiment.

Further, the phase dispersion D_ϕ of Cuperman is not equivalent to phase alignment. In particular, Cuperman does not transmit phase information and synthesizes the phases for the sinusoid oscillators in the receiver; see page 497, left column, paragraph at lines 23-26. The phase dispersion is computed from the autocorrelation at the pitch lag (i.e., pitch period), not from any phase

information; see page 497, right column lines 8-12. The phase dispersion factor controls switching between noise and the synthesized phases as phase sources for the oscillators; see page 497, left column, lines 6-9 and Figure 2. The phase dispersion factor is to disperse (decorrelate) the various phases synthesized (see page 497, right column, paragraph at lines 5-12) and is not to align the synthesized phases. That is, there is no suggestion of phase alignment. The claimed alignment phase is for alignment, not dispersion. Consequently, the references do not suggest any of the independent claims 1, 3, and 4. Thus claims 1 and 3-7 are patentable over the references.

(2) Claim 2 was rejected as unpatentable over Aguilar in view of Cuperman and Thomson.

Applicants rely upon the patentability of parent claim 1.

Rule 41.37(c)(1)(viii) Claims appendix

1. A hybrid speech encoder, comprising:

(a) a linear prediction, pitch and, voicing analyzer;

(b) a parametric encoder coupled to said analyzer; and

(c) a waveform encoder coupled to said analyzer;

(d) wherein said parametric encoder encodes an alignment phase.

2. The encoder of claim 1, wherein:

(a) said alignment phase is encoded as the difference of an intermediate phase and a phase alignment to codebook waveform phase.

3. A speech decoder, comprising:

(a) a linear prediction synthesizer; and

(b) a parametric decoder coupled to said synthesizer;

(c) wherein said parametric decoder decodes an alignment phase.

4. A speech encoder, comprising:

(a) a linear prediction, pitch and, voicing analyzer; and

(b) a parametric encoder coupled to said analyzer;

(c) wherein said parametric encoder encodes an alignment phase.

5. The encoder of claim 1, wherein:

(a) said analyzer, said parametric encoder, and said waveform encoder are implemented as programs on a programmable processor

6. The decoder of claim 3, wherein:

(a) said synthesizer and said parametric decoder are implemented as programs on a programmable processor

7. The encoder of claim 4, wherein:

(a) said analyzer and said parametric encoder are implemented as programs on a programmable processor

Rule 41.37(c)(1)(ix) Evidence appendix

n/a

Rule 41.37(c)(1)(x) Related proceedings appendix

n/a